Black Sea Bass

2017 – 2019 Specifications

February 15, 2017
Outline

1. Stock Status Summary
2. Recent Fishery Performance
3. Regulatory Review
4. Staff Recommendation
5. SSC Recommendation
6. Monitoring Committee Recommendation
7. Advisory Panel February Webinar Comments
Stock Status

- New accepted benchmark: SAW/SARC 62 (2016)
  - Age structured assessment program (ASAP) for two spatial sub-units (North and South of Hudson Canyon)
  - Stock not overfished and overfishing not occurring in assessment terminal year (2015)
    - SSB is estimated to be 2.3 times higher than target; 4.6 times higher than threshold
    - F is 25% below Fmsy proxy
Biological Reference Points

From 2016 Benchmark Assessment:

- $F_{\text{MSY}}$ proxy = $F_{40\%} = 0.36$
- $SSB_{\text{MSY}}$ proxy = 21.3 mil lb (9,667 mt)
- Minimum stock size threshold (1/2 $SSB_{\text{MSY}}$ = 10.7 mil lb (4,834 mt)
- Note: SSB is both male and female mature biomass
Black Sea Bass F Trends and Reference Points

- **Average F (4-7)**
- **F 40% (Fmsy proxy)**
- **Retro Adj F**
Biomass

Black Sea Bass SSB Trends and Reference Points

SSB (MIL LB)

SSB
SSB Target (SSBmsy proxy)
SSB Threshold (1/2 SSBmsy proxy)
Retro Adj SSB

Black Sea Bass SSB and Recruitment (Age 1)

- SSB (mil lb)
- Age 1 (000's)

Year: 1989 to 2015

- Recruitment
- SSB
- 89-15 Ave
Fishery Performance

Total Black Sea Bass Discards

000's lb

Commercial Discards
Recreational Discards
Total

## Fishery Performance

<table>
<thead>
<tr>
<th>Year</th>
<th>Commercial Landings (mil lb)</th>
<th>Commercial Quota (mil lb)</th>
<th>Percent Overage (+)/Underage(-)</th>
<th>Recreational Landings (mil lb)</th>
<th>Recreational Harvest Limit (mil lb)</th>
<th>Percent Overage (+) / Underage(-)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>1.69</td>
<td>1.71</td>
<td>-1%</td>
<td>1.17</td>
<td>1.78</td>
<td>-34%</td>
</tr>
<tr>
<td>2012</td>
<td>1.72</td>
<td>1.71</td>
<td>1%</td>
<td>3.19</td>
<td>1.32</td>
<td>142%</td>
</tr>
<tr>
<td>2013</td>
<td>2.26</td>
<td>2.17</td>
<td>4%</td>
<td>2.46</td>
<td>2.26</td>
<td>9%</td>
</tr>
<tr>
<td>2014</td>
<td>2.18</td>
<td>2.17</td>
<td>0%</td>
<td>3.67</td>
<td>2.26</td>
<td>62%</td>
</tr>
<tr>
<td>2015</td>
<td>2.29</td>
<td>2.21</td>
<td>4%</td>
<td>3.79</td>
<td>2.33</td>
<td>63%</td>
</tr>
<tr>
<td>5-yr Avg.</td>
<td>-</td>
<td>-</td>
<td>1.60%</td>
<td>-</td>
<td>-</td>
<td>48.40%</td>
</tr>
<tr>
<td>Prelim 2016</td>
<td>2.52</td>
<td>2.70</td>
<td>-7%</td>
<td>4.67</td>
<td>2.82</td>
<td>66%</td>
</tr>
</tbody>
</table>
Regulatory Review

- **2010 – 2015: Constant Catch**
  - 2010 – 2013 (initial) = 4.50 million lb (2,041 mt)
  - 2013 (revised) – 2015 = 5.50 mil lb (2,494 mt)

- **2016 – 2017: adopted new methodology using MSE approach developed by Carruthers et. al 2014**
  - 2016-2017 ABC = 6.67 mil lb (3,024 mt)
  - 2017 specifications would be revisited once new assessment was completed and reviewed
Staff Recommendation

- New approved benchmark stock assessment represents best available science to guide management decisions
- Presents a more comprehensive and robust picture on black sea bass resource
- OFL projections from assessment are appropriate for setting specifications
- Recommends setting multi-year specifications for 2017 – 2019 (re-visit out years)
Staff Recommendation

Recommendations apply the following:

- OFL projections from North and South developed separately, then combined by weighting the sub-units based on proportion of catch

- Retrospective adjusted estimates (ex. SSB, Abundance) for each sub-unit are used as approved by peer review

- Application of Council’s Risk Policy:
  - Assumed typical life history
  - Assumed OFL CV of 60%
## Staff Recommendation

<table>
<thead>
<tr>
<th>Year</th>
<th>ABC (mil lb)</th>
<th>ABC (mt)</th>
<th>F</th>
<th>P* Value</th>
<th>SSB (mil lb)</th>
<th>SSB (mt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>6.67</td>
<td>3,024</td>
<td>0.27</td>
<td>n/a</td>
<td>41.11</td>
<td>18,647</td>
</tr>
<tr>
<td>2017</td>
<td>10.47</td>
<td>4,750</td>
<td>0.36</td>
<td>0.4</td>
<td>35.88</td>
<td>16,275</td>
</tr>
<tr>
<td>2018</td>
<td>8.94</td>
<td>4,057</td>
<td>0.36</td>
<td>0.4</td>
<td>31.29</td>
<td>14,183</td>
</tr>
<tr>
<td>2019</td>
<td>7.97</td>
<td>3,617</td>
<td>0.36</td>
<td>0.4</td>
<td>28.26</td>
<td>12,820</td>
</tr>
</tbody>
</table>
MAFMC SSC
ABC Recommendations

Black Sea Bass
2017-2019 Fishing Years
1) The level of uncertainty that the SSC deems most appropriate for the information content of the most recent stock assessment, based on criteria listed in the Omnibus Amendment:

• The SSC acknowledges the substantial improvement in the stock assessment for Black Sea Bass.
• The SSC accepted the overfishing limit (OFL) estimate provided in the assessment.
• The SSC determined the level of uncertainty of OFL in the assessment requires an SSC-specified coefficient of variation (CV).
2) If possible, the level of catch (in weight) and the probability of overfishing associated with the overfishing limit (OFL):

- The SSC accepts the OFL proxy \( F_{40\%} = 0.36 \) used in the assessment.

<table>
<thead>
<tr>
<th>Year</th>
<th>OFL (M lbs)</th>
<th>OFL (mt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>12.05</td>
<td>5,467</td>
</tr>
<tr>
<td>2018</td>
<td>10.29</td>
<td>4,669</td>
</tr>
<tr>
<td>2019</td>
<td>9.18</td>
<td>4,163</td>
</tr>
</tbody>
</table>
3) The level of catch (in weight) and the probability of overfishing associated with the acceptable biological catch (ABC) for the stock:

- The SSC acknowledges the substantial effort invested by state and federal scientists that resulted in an improved assessment.
- The SSC recommends using an OFL CV of 60%:
  - Multiple alternative models were largely concordant
  - Spatially explicit models were used in the assessment, with efforts to explore the consequences of misspecification of the spatial resolution
  - Consistent patterns in the fishery independent indices
  - Similar to other stocks for which a 60% was used
3) The level of catch (in weight) and the probability of overfishing associated with the acceptable biological catch (ABC) for the stock (cont’d):

• The SSC also notes that the assessment included a thorough analysis of the particulars of the life history of Black Sea Bass and, thus, recommends that no additional buffer for an atypical life history is necessary.
3) The level of catch (in weight) and the probability of overfishing associated with the acceptable biological catch (ABC) for the stock (cont’d):

<table>
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<tr>
<th>Year</th>
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<td>4,750</td>
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</tr>
<tr>
<td>2019</td>
<td>7.97</td>
<td>3,617</td>
</tr>
</tbody>
</table>
4) The most significant sources of scientific uncertainty associated with determination of OFL and ABC:

- The natural mortality rate \((M)\) used in the assessment;
- The spatial distribution of productivity within the stock range;
- The level, temporal pattern, and spatial distribution of recreational catches; and
- The nature of exchanges between the spatial regions defined in the assessment model.
5) **Ecosystem considerations accounted for in the stock assessment:**

- The assessment explored the role of benthic habitat, temperature, depth, and salinity as explanatory factors on exchange rates.
- No additional ecosystem considerations were included in the determination of ABC.
6) Research recommendations (1 of 2):

The SSC endorses the list of research recommendations included in the SARC report. Also:

- Consider a directed study of the genetic structure in the population north of Cape Hatteras.
- Increase our understanding of movement rates and cues within the population.
- Develop a reliable fishery independent index for Black Sea Bass beyond the existing surveys. This may require development and implementation of a new survey.
6) Research recommendations (2 of 2):

- Invest in additional monitoring and compliance to control ABCs at recommended levels that are necessary if predicted scientific outcomes for future stock biomasses are to be realized.
- Evaluate the implications of range expansion to stock and fishery dynamics.
- Understand the importance of recruitment variability, given the role of individual, strong year classes in the dynamics of the population and the fisheries it supports.
Based on SSC recommended ABC’s

Staff recommended Commercial and Recreational Specifications are as follows:
Black Sea Bass
Updated 2017

OFL = 12.05 mil lb
January 2017 SSC Recommendation

ABC = 10.47 mil lb
January 2017 SSC Recommendation

Landings portion = 8.41 mil lb
2013–2015 Ave from assessment (80.7%)

Commercial landings = 4.12 mil lb
49% of ABC landings portion (per FMP)

Recreational landings = 4.29 mil lb
51% of ABC landings portion (per FMP)

Commercial discards = 0.97 mil lb
47.2% of ABC discards portion (avg. % of total discards attributable to commercial fishery 2013-2015)

Recreational discards = 1.09 mil lb
52.8% of ABC discards portion (avg. % of total discards attributable to recreational fishery 2013-2015)

Commercial ACL = 5.09 mil lb
Commercial landings plus commercial discards

Commercial ACT = 5.09 mil lb
Recommended by Monitoring Committee; equal to or reduced from ACL to account for management uncertainty

Commercial Quota = 4.12 mil lb
ACT minus commercial discards

State Quotas

Recreational ACL = 5.38 mil lb
Recreational landings plus recreational discards

Recreational ACT = 5.38 mil lb
Recommended by Monitoring Committee; equal to or reduced from ACL to account for management uncertainty

Recreational Harvest Limit = 4.29 mil lb
ACT minus recreational discards
### Commercial ACL, ACT and Quota

<table>
<thead>
<tr>
<th>Management Measure</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mil lb.</td>
<td>mt</td>
<td>mil lb.</td>
<td>mt</td>
</tr>
<tr>
<td>OFL</td>
<td>NA</td>
<td>NA</td>
<td>12.05</td>
<td>5,467</td>
</tr>
<tr>
<td>ABC</td>
<td>6.67</td>
<td>3,024</td>
<td>10.47</td>
<td>4,750</td>
</tr>
<tr>
<td>ABC Landings Portion</td>
<td>5.53</td>
<td>2,510</td>
<td>8.41</td>
<td>3,814</td>
</tr>
<tr>
<td>ABC Discards Portion</td>
<td>1.13</td>
<td>514</td>
<td>2.06</td>
<td>936</td>
</tr>
<tr>
<td>Commercial ACL/ACT</td>
<td>3.15</td>
<td>1,428</td>
<td>5.09</td>
<td>2,311</td>
</tr>
<tr>
<td>Projected Commercial Discards</td>
<td>0.44</td>
<td>198</td>
<td>0.97</td>
<td>442</td>
</tr>
<tr>
<td>Commercial Quota</td>
<td>2.7</td>
<td>1,226</td>
<td>4.12</td>
<td>1,869</td>
</tr>
</tbody>
</table>

*2016 specifications are provided for comparison*

*2017-2019 recommended specifications*
Staff Recommendation

- Recreational ACL, ACT and Harvest Limit

<table>
<thead>
<tr>
<th>Management Measure</th>
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<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mil lb.</td>
<td>mt</td>
<td>mil lb.</td>
<td>mt</td>
</tr>
<tr>
<td>Recreational ACL/ACT</td>
<td>3.52</td>
<td>1,597</td>
<td>5.38</td>
<td>2,439</td>
</tr>
<tr>
<td>Projected Recreational Discards</td>
<td>0.70</td>
<td>317</td>
<td>1.09</td>
<td>494</td>
</tr>
<tr>
<td>Recreational Harvest Limit</td>
<td>2.82</td>
<td>1,280</td>
<td>4.29</td>
<td>1,945</td>
</tr>
</tbody>
</table>

*Note: 2016 specifications are provided for comparison; 2017-2019 recommended specifications*
Monitoring Committee Recommendation

- Staff recommendation for ACLs/ACTs was agreed to by Monitoring Committee

- Support 3-year specifications
  - Annually revisit catch and landings for potential modifications
  - Support an update assessment in 2018 for 2019 specs
  - Re-evaluate changes in discards
ACLs=ACTs – no deduction for management uncertainty
- Commercial landings within 2% of quota over last 5 years
- Significant overages of rec harvest compared to RHL
  - However RHL not reflective of large and increasing stock abundance
  - New assessment indicates RHLs during time would have been much higher; overages may not have occurred
- Agree with staff recommendation and justification for not applying rec and comm AMs from 2015 in 2017
Comments regarding the recommended 2017 – 2019 specifications:

- Several advisors commented that 3-year average ABC’s should be set
- More consistent & precautionary approach to minimize year-to-year changes in ABC
- SSC should reconsider 2018 and 2019 specs this year
- Management should be based on F and not hard quotas
- Evaluate the tides/lunar cycles and influence on population
## Resulting Catch & Landing Limits

<table>
<thead>
<tr>
<th>Management Measure</th>
<th>2017 (mil. lb.)</th>
<th>2018 (mil. lb.)</th>
<th>2019 (mil. lb.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFL</td>
<td>12.05</td>
<td>10.29</td>
<td>9.18</td>
</tr>
<tr>
<td>ABC</td>
<td>10.47</td>
<td>8.94</td>
<td>7.97</td>
</tr>
<tr>
<td>Commercial ACL/ACT</td>
<td>5.09</td>
<td>4.35</td>
<td>3.88</td>
</tr>
<tr>
<td>Recreational ACL/ACT</td>
<td>5.38</td>
<td>4.59</td>
<td>4.10</td>
</tr>
<tr>
<td>Commercial Quota</td>
<td>4.12</td>
<td>3.52</td>
<td>3.14</td>
</tr>
<tr>
<td>Recreational Harvest Limit</td>
<td>4.29</td>
<td>3.66</td>
<td>3.27</td>
</tr>
</tbody>
</table>
QUESTIONS?